

REMARKS/ARGUMENTS

In this, the first Action in the case, the Examiner objected to claim 3 as being improper because it fails to further limit the previous claims. Applicant respectfully traverses this rejection.

Claim 1 recites "combining" probabilities, while claim 3 recites that the combining comprises "summing" the probabilities. Combining is a broader term than summing. For example, The Random House College Dictionary (revised ed. 1982), Random House, Inc., defines "combine" as "to bring or join into a close union or whole; unite; associate; coalesce," while it defines a "sum" as "the aggregate...determined by the mathematical process of addition." It should therefore be evident that summing is but one example of combining. Consequently, claim 3 does further limit the recitations of claim 1. Applicant therefore requests that the objection to claim 3 be withdrawn.

The Examiner next objected to claims 19-20 "as being in improper form because a multiple dependent claim can only refer to one set of claims." This rejection is respectfully traversed.

Claims 19-20 each refer to only one set of claims, namely claims 1-18. MPEP §608.01(n) gives an example of what reference to more than one set of claims means: "A device as in claims 1, 2, 3, or 4, made by a process of claims 5, 6, 7, or 8." This illustrative claim refers to a first set of claims 1-4 and a second set of claims 5-8. Applicant's claims 19-20 do not have a similar reference to multiple sets of claims.

The fact that applicant's referenced set of claims 1-18 contains multiple independent claims is irrelevant. Consider, for example, the illustrative examples of "Acceptable Multiple Dependent Claims Wording" in MPEP §608.01(n) on page 600-64. In none of those claims is the acceptability of the claim conditioned on how many independent claims

the referenced set of claims contains. Moreover, MPEP §608.01(n) gives the example of a claim multiply dependent from two independent claims as being proper – see page 600-66, “Fee Calculation Example” claim 10 vis-à-vis the discussion of claim 11, in the first column of page 600-67.

For the above reasons, applicant asserts that the objection to claims 19-20 is unfounded, and therefore requests that it be withdrawn.

The Examiner next rejected claims 4, 6, and 19-20 under 35 U.S.C. §112, second paragraph, as being indefinite. Claims 4 and 6 were rejected for not defining “h” when it is first referenced. In response, applicant has amended claims 4 and 6 to define “h” up front. Applicant therefore requests that the Section 112, second paragraph, rejection of claims 4 and 6 as amended be withdrawn.

Claims 19-20 were rejected because “it is unclear whether the claims are independent or dependent claims. As is, apparatus or computer-readable medium claims should not depend from method claims. Additionally, the multiple dependencies refer to separate claim groupings, so it is unclear what claims they are meant to depend from.” This rejection is respectfully traversed.

With respect to dependency of apparatus and computer-readable medium claims from method claims, MPEP §2173.05(p) explicitly states that, “There are many situations where claims are permissively drafted to include a reference to more than one statutory class of inventions.” MPEP §2173.05(f) elaborates on this point and makes it clear that reference in a claim of one type to a claim of another type is not indefinite and “should not necessarily be rejected as improper or confusing under 35 U.S.C. 112, second paragraph.” Examples are given there of acceptable cross-type claim references, such as “The product produced by the method of claim 1”, “A method of producing ethanol comprising contacting amylose with

the culture of claim 1,” and a reference to the nozzle of claim 7 in a method claim (emphasis added). Applicant’s cross-type claim references are analogous to those which are approved by the MPEP: claim 19 is an apparatus claim that refers to method claims, and claim 20 is a product claim that refers to method claims. Applicant’s claims 19 and 20 are thus clearly sanctioned by MPEP §2173.05(f) and (p).

As to whether claims 19-20 are independent or dependent, the answer is that they are multiple dependent, and therefore they are a type of dependent claim – see 37 C.F.R. §1.75(c).

As to claims 19-20 referring to separate claim groupings, this was shown to be untrue in the discussion above of the objection to these claims on the same grounds.

In summary, applicant has shown that the Section 112, second paragraph, rejection of claims 19-20 is unjustified. Applicant therefore requests that this rejection be withdrawn.

The Examiner next rejected claims 19 and 21-22 under 35 U.S.C. §101 as directed to non-statutory subject matter because “the apparatus are (sic) software per se, as it is not tangibly embodied, failing to recite any hardware as part of the apparatus.” In response, applicant has amended claim 19 to recite “means for effecting” the method of one of claims 1-18. In other respects, this rejection is respectfully traversed.

MPEP §2181 states that, “If applicant wishes to have the claim limitation treated under 35 U.S.C. 112, sixth paragraph, applicant must ...amend the claim to include the phrase ‘means for’...” Thus, by his amendment of claim 19, applicant has converted claim 19 into a “means plus function” claim that is expressly authorized under 35 U.S.C. §112, sixth paragraph. Claims 21 and 22 already have that form. As the sixth

paragraph of Section 112 states, “such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” (emphasis added). The term “shall” is imperative; as MPEP 2181 states, citing In re Donaldson Co., 29 USPQ2d 1845 (Fed. Cir. 1994), “the US Patent and Trademark Office may not disregard the structure disclosed in the specification corresponding to such language when rendering a patentability determination.” Applicant’s specification and drawing do not show the means to be software per se. Rather, they describe and show a processor 112 executing a stored program 122. Therefore, the “means” are a combination of at least the processor and the program, and not the program alone. A programmed processor is a machine, which is statutory subject matter. Moreover, the machine has a practical application in the technological arts, and therefore constituted statutory subject matter (see, e.g., In re Alappat, 31 USPQ2d 1544, 1557 (Fed. Cir. 1994)).

In view of the above discussion, applicant suggests that the Section 101 rejection of claims 19 and 21-22 as amended is unfounded. Applicant therefore requests that this rejection be withdrawn.

The Examiner rejected claims 1-13, 15-16, and 18-22 under 35 U.S.C. §102(e) over US patent no. 6,393,433 (Kalavade et al.). This rejection is respectfully traversed.

Kalavade et al. disclose a method of modeling the effects of different execution-scheduling policies on applicants (col. 2, lines 1-20; col. 4, lines 9-13) that are repeatedly executed at fixed periods of time (iterated) and each of which has a deadline (a fixed period of time) during which it must complete its execution (col. 3, lines 49-52; col. 5, lines 17-23; col. 5, line 66, to col. 6, line 9). As such, Kalavade et al. are computing the probabilities that the applications’ execution will complete within the period, before the deadline, i.e., before it is time for them to

execute anew (col. 4, line 14, to col. 5, line 6; col. 10, lines 21-24; col. 10, line 45, to col. 11, line 9). Since Kalavade et al. are making predictions based on probabilities, they use statistical methods.

Applicant's invention is likewise making predictions based on probabilities, and hence uses statistical methods. But that is where similarity between Kalavade et al. and applicant's invention ends. Applicant's invention as claimed in claims 1 and 21 and claims dependent therefrom is predicting how many resources it will have free and available to service new tasks at some future point in time, so that it knows how many tasks it should make available for servicing at that future point in time. Kalavade et al. do not disclose doing this. To make the prediction, the claimed invention determines a probability of availability at that future point in time of each of a plurality of the resources. Contrary to the Examiner's assertion, Kalavade et al. do not disclose doing this. The claimed invention then combines those probabilities to obtain a number. Contrary to the Examiner's assertion, Kalavade et al. do not disclose doing this. Finally, the claimed invention uses that number to schedule new tasks for the resources for the future point in time. Again contrary to the Examiner's assertion, Kalavade et al. do not disclose doing this.

In summary, Kalavade et al. do not disclose any of the elements of applicant's claims 1 and 21 and claims dependent therefrom. Hence, Kalavade et al. do not render these claims unpatentable.

Applicant's claims 6 and 22 and claims dependent therefrom are directed to determining a probability that is used for scheduling a task for servicing. Kalavade et al. leave no such teaching. Claims 6 and 22 recite "determining a probability $F(t)$ of the resource completing servicing the task by now," where the first claim element indicates that "now" is a time at which a resource has been servicing a task for an amount of time t . Kalavade et al. do not determine a probability of a resource completing

servicing a task by "now." At each time during execution of applications, Kalavade et al. merely consider whether or not a task has finished execution; they do not determine the probability of the execution having finished (see, e.g., Fig. 7 and col. 8, line 57, to col. 9, line 32). The passage of Kalavade et al. referenced by the Examiner as disclosing determining $F(t)$ (col. 10, lines 1-20) merely discloses determining the probability that the processing delay (PD) of an application exceeds a value T (see col. 9, lines 60-62).

The claims further recite "determining a probability P that the resource will complete servicing the task within an amount of time h from now as $(F(t+h)-F(t))/(1-F(t))$." Again Kalavade et al. do not make such a determination. The Examiner referenced col. 9, line 33, to col. 10, line 24 of Kalavade et al. as disclosing this determination. The Examiner is mistaken. Col. 9, lines 33-60, disclose computing the probability that the state of computation at a state transition jumps from one given state to another given state in a single jump. This bears no relevance to the probability determination recited in applicant's claims. And, as was already described above, col. 9, line 60, to col. 10, line 24, merely disclose determining the probability that the processing delay of an application exceeds a value T . Again, this bears no relevance to the probability determination recited in the claims.

Finally, claims 6 and 22 recite, "in response to P , scheduling another task for servicing." There is no corresponding disclosure in Kalavade et al. Firstly, as was just shown, Kalavade et al. do not compute P . Secondly, scheduling of tasks in Kalavade et al. is based upon a selected scheduling policy (see, e.g., col. 3, lines 57-62) and not on the basis of probabilistic computations.

It should therefore be evident that Kalavade et al. do not disclose, teach, or suggest the invention recited in claims 6 and 22 and claims

dependent therefrom, and therefore that Kalavade et al. do not render the claims unpatentable.

The Examiner rejected claims 14 and 17 under 35 U.S.C. §103(a) over Kalavade et al. in view of US patent no. 6,816,798 (Pena-Nieves et al.). This rejection is also respectfully traversed.

The Examiner asserted that, "Pena-Nieves teaches the invention as claimed." Applicant respectfully disagrees. Pena-Nieves et al. disclose a system for collecting, analyzing, and reporting reliability data. Other than disclosing the use of the Weibull distribution as a statistical tool, Pena-Nieves et al. bear no relevance to applicant's claimed invention.

The Examiner further characterized Pena-Nieves et al. as disclosing the specific additional recitations of dependent claims 14-17. Applicant likewise disagrees with this characterization. But that is largely irrelevant, because even if the Examiner's characterization of Pena-Nieves et al. were correct, the combined teachings of Kalavade et al. and Pena-Nieves et al. would still not render applicant's claimed invention unpatentable, for the following reason.

Claims 14 and 17 depend from claim 6. As was shown above, Kalavade et al. do not disclose, teach, or suggest the invention of claim 6. Pena-Nieves et al. likewise do not disclose, teach, or suggest the invention of claim 6. The only relevance of Pena-Nieves et al. to the claimed invention is disclosure of statistical methods such as the Weibull distribution to analysis of data. Therefore, the combined teachings of Kalavade et al. and Pena-Nieves et al. also do not disclose the invention of claim 6. As such, the two references cannot and do not render unpatentable any claims that depend from claim 6.

In view of the above discussion, applicant asserts that the Section 103(a) rejection of claims 14 and 17 is unfounded. Applicant therefore requests that this rejection be withdrawn.


Applicant has also taken this opportunity to add a missing element to Fig. 1. This element is referenced in the specification, e.g., at page 6, lines 1-2.

The Examiner's objections and rejections having been properly addressed and disposed of, applicant asserts that the application is now in condition for allowance. Applicant therefore requests that the application be reconsidered and thereafter be passed to issue.

Applicant believes that the foregoing is dispositive of all issues in the application. But, if the Examiner should deem that a telephone interview would advance prosecution, applicant requests the Examiner to call applicant's attorney at the telephone number listed below.

Respectfully submitted,

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Amendments to the Drawing:

Applicant requests the Examiner's permission to amend Fig. 1 of the drawing as shown in red on the attached copy thereof.